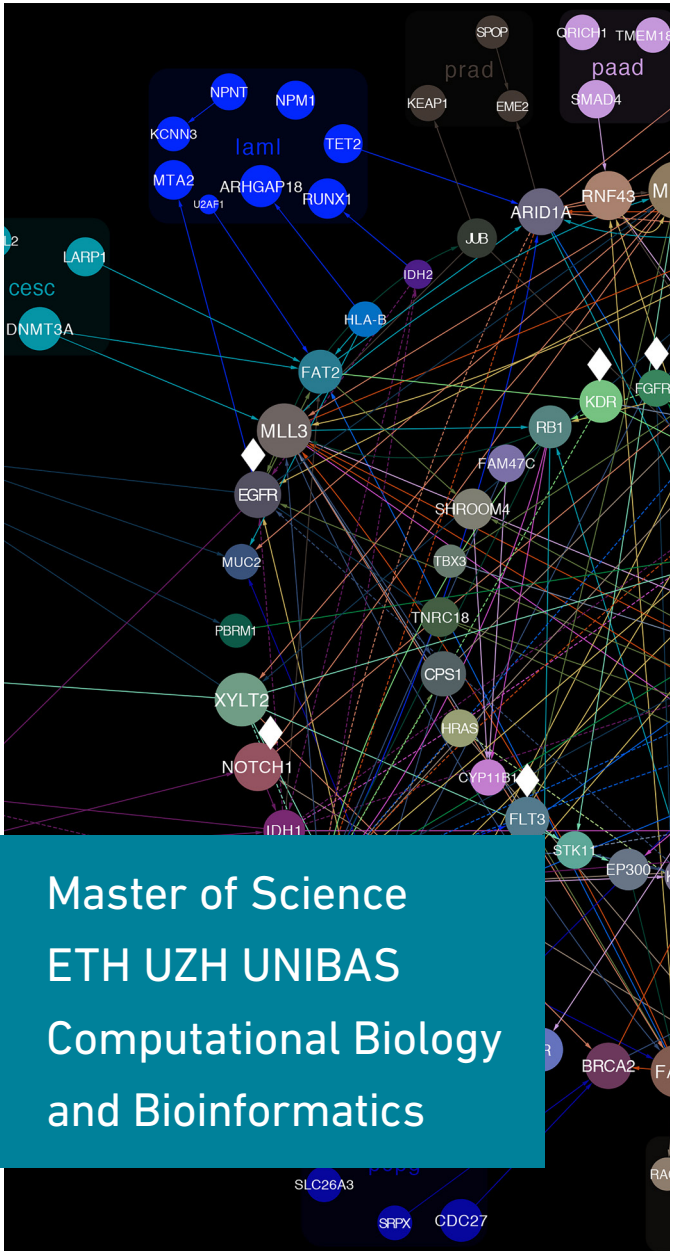
ETH zürich

University of Basel

University of Zurich[UZH]



Master of Science ETH UZH UNIBAS Computational Biology and Bioinformatics

D BSSE

HIGHLIGHTS

- unique Master's degree programme with highly interdisciplinary elements
- hands-on research experience through project work
- excellent, mentor-driven supervision
- flexible course choice across three universities

Academic title

Master of Science ETH UZH UNIBAS in Computational Biology and Bioinformatics

Leading house

Department of Biosystems Science and Engineering (D-BSSE) of ETH Zurich

Language of instruction

English

Credits | duration

120 ECTS | 2 years

Location

Zurich and Basel

credits can be covered in either city alone, or in both cities (by commuting or relocating between semesters)

The MSc in Computational Biology and Bioinformatics (CBB) is a two-year programme worth 120 ECTS, offering highly research-focused, intensive training at the intersection of biology and computer science. The programme is jointly offered by ETH Zurich, the University of Basel and the University of Zurich.

The recent development of experimental methods, such as next generation sequencing or high-resolution imaging, gives insight into cellular systems with unprecedented detail. The generation of large-scale datasets, as well as the increasing need to analyse and design highly complex biological systems, have opened a new domain of research with fundamental scientific challenges. Computational biology and bioinformatics complement the experimental biosciences with quantitative modelling and data analysis at the high complexity needed for living systems.

The Master's degree programme in Computational Biology and Bioinformatics is a young, interdisciplinary programme for future leaders in life science research at the intersection of biology and computer science. Students learn to develop and deploy computational tools to address current challenges in biology. They are trained to become experienced, creative, and efficient problem solvers in computational biology and bioinformatics, equipped with advanced methodological and conceptual knowledge to deal with the problems of tomorrow.

The Master's degree in Computational Biology and Bioinformatics qualifies graduates for positions in the pharmaceutical and biotechnology industries, in clinics and clinically focused enterprises that focus on - or require - software development and data analysis. It also provides a solid foundation for an academic career.

Curriculum Structure

The **mentor-based study programme** provides students with guidance on the flexible course selection across three universities.

- **Core Courses** provide basic and advanced knowledge in bioinformatics, biophysics, biosystems, and data science, with the mandatory CBB seminar serving as cornerstone.
- **Advanced Courses,** divided into a theory and a biology section, provide specific insights and the opportunity to deepen knowledge in individual areas of interest.
- A **Science in Perspective** course enriches students' general education.
- Flexible **Lab Rotations** (total duration 12 weeks) familiarise students with scientific working methods and provide in-depth insights into current research topics. Students may complete projects in research groups or an industry internship.
- The programme concludes with a 24-week **Master's Thesis**, including a written report and an oral presentation.

1st semester	2nd semester	3rd semester	4th semester
Core Courses			**40 ECTS**
CBB Seminar (mandatory)			
Core Courses (flexible choice from selection) bioinformatics | biophysics | biosystems | data science			
Advanced Courses (flexible choice)			**32 ECTS**
Advanced Courses Theory			
Advanced Courses Biology			
Science in Perspective			
Lab Rotation(s) or Industry Internship			**18 ECTS**
		12-weeks project completed in a research group or in industry	
Master's Thesis			**30 ECTS**
			24-week research project

Application & Admission

Excellent students holding a Bachelor's degree in computer science, bioinformatics, biology, natural sciences, engineering, biomedicine, and other disciplines with a strong theoretical-mathematical background are welcome to apply. A minimum background in biology, computer science and mathematics is mandatory for all students.

The admission committee may issue additional requirement courses to students whose Bachelor's degree curriculum does not fulfil all admission criteria.

Applications to this joint degree are handled by ETH Zurich.

Further information

MSc CBB programme website
www.cbb.ethz.ch

Department of Biosystems Science and Engineering
www.bsse.ethz.ch

Application process and admission prerequisites
www.ethz.ch/studies/master

Studying at ETH
www.ethz.ch/students

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